

REMARKS

In the Office Action mailed March 25, 2008, the Office took the following action: (1) rejected claims 1, 2, 4-6, 10-12, 15, 16, 18-20, 22-25, 28, 29, 31, and 33-40 under 35 U.S.C. §103(a) as being unpatentable over Cable et al. (U.S. Patent No. 3,226,027 'Cable') in view of the ordinary skill in the art; (2) rejected claims 7-9, 21, 30, and 43-48 under 35 U.S.C. §103(a) as being unpatentable over Cable in view of the ordinary skill in the art; and (3) rejected claims 13, 26, 41, and 42 under 35 U.S.C. §103(a) as being unpatentable over Cable in view of Adams (U.S. Patent No. 3,627,436 'Adams'). Applicant respectfully traverses and further requests reconsideration and withdrawal of the rejections in view of the following remarks.

Examiner Interview

Applicant thanks Examiner Howell for the telephone interview conducted on Thursday, July 24, 2008. During the telephone interview, Applicant's attorney, Damon Kruger, along with Elizabeth Zehr, discussed proposed amendments to claim 1 which was rejected under §103(a) in the pending Office Action. Specifically, Applicant submits that claim 1 is not taught by the relied upon art.

Applicant's attorney understood the Examiner to agree that claim 1 would overcome the rejections of the cited art. Applicant thanks the Examiner for this indication and has presented claim 1 accordingly along with the arguments presented during the telephone interview.

Applicant thanks the Examiner for considering the above arguments. These, and other remarks, are included below under their respective sections to assist the Examiner in more fully understanding the Applicant's position on the rejections under §103(a).

Rejections under 35 U.S.C. §103(a)

The Office Action rejected claims 1, 2, 4-9, 10-12, 15, 16, 18-25, 28- 31, 33-40, and 43-48 under 35 U.S.C. § 103(a) as being unpatentable over Cable in view of the ordinary skill in the art; and rejected claims 7-9, 21, 30, and 43-48 under 35 U.S.C. §103(a) as being unpatentable over Cable in view of Adams. Applicant respectfully traverses.

Claim 1

As amended, claim 1 recites:

An apparatus for supporting a manufacturing tool relative to a workpiece, the apparatus comprising:

a track assembly having a plurality of attachment devices configured to be attached to the workpiece and including at least one rail, the rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and a rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis, wherein the rack comprises a plurality of tapered apertures disposed within the substantially smooth surface, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack, the plurality of attachment devices coupled to the at least one rail such that the plurality of attachment devices are distributed along the longitudinally-extending neutral axis and disposed directly between the at least one rail and the workpiece when the track assembly is engaged to the workpiece;

a carriage comprising an x-axis portion moveably coupled to the track assembly and moveable relative to the workpiece along the rail, the carriage including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack, the carriage further comprising a y-axis portion slideably coupled to the x-axis portion and moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the rail of the track assembly, and the carriage further comprising a tool support configured to receive and support a manufacturing tool; and

an opposing-force support assembly moveable along the y-axis independent from the tool support, the opposing-force support assembly coupled to the carriage and securable to the workpiece.

(Emphasis added). Claim 1 has been amended to include, in part, the limitations of previous dependent claim 13. Cable either singly or in view of Adams fails to teach or suggest the recitations of claim 1. Specifically, Cable in view of Adams fails to teach or suggest “an opposing-force support assembly moveable along the y-axis independent from the tool support.” Cable generally pertains to “a rail in combination with holding straps and swivelly mounted permanent magnets to enhance attachment and magnetic holding power of a track and the like of this invention against a work surface.” (Column 1, lines 14-17). The Office recites with reference to formerly presented dependent claim 13: “Cable et al. ‘027 lacks an opposing-force support assembly coupled to the carriage and adapted to be secured to the work piece to at least partially counter-balance a manufacturing force exerted on the work piece by the manufacturing tool.” (Office Action, page 4, lines 16-19). Applicant agrees with the Office regarding the preceding quoted statement where the Office recognizes the deficiency of Cable.

The Office relies on Adams, in combination with Cable, in rejection of previous claim 13. The Office recites with reference to formerly presented dependent claim 13: Adams shows “an opposing-force support assembly (22) coupled to the carriage and adapted to be secured to the work piece to at least partially counterbalance a manufacturing force exerted on the work piece by the manufacturing tool (col. 3, lines 20-37).” (Office Action, page 5, lines 8-11). However, Adams fails to remedy the above-noted deficiencies of Cable.

Adams generally pertains to a “drilling apparatus mounted on and traveling step by step along a track mounted on a work panel and drilling a row of spaced holes in the panel in accordance with the spacing of positioning slots in a template on the track.” (Abstract). The apparatus of Adams also includes:

a clamp unit 22 which trails the drill unit and has a clamping element 23 (FIGS. 5, 5a and 5b) insertable in a previously drilled hole 13 and operable to pull the panel toward the carriage 15 for firm engagement with the drill unit preparatory to drilling, and a second latching mechanism 24 also cooperating with the positioning means on the track to locate the clamp unit relative to each hole into which the clamping element is to be inserted.

(Column 3, lines 27-35). Specifically, the “clamp unit 22 is supported on the tiltable frame 58 of the drill carriage 15 in trailing relation with the drill unit 17 and with the clamping element 23 longitudinally aligned with the axis of the drilling tool 19 for insertion in a drilled hole.” (Column 5, line 73 – Column 6, line 1). Thus, the clamp unit of Adams is positioned on the same tiltable platform as the drill unit such that the clamp unit is unable to move along the y-axis independent of the drill unit. This is not the equivalent of “*an opposing-force support assembly moveable along the y-axis independent from the tool support*” as recited in claim 1.

The amendments to claim 1 are supported in the specification by at least page 7, lines 7-10. No new matter has been added.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 1.

Claims 2, and 4-13

Claims 2 and 4-13 depend from independent claim 1 and are thus believed allowable at least for their dependency on the allowable base claim. Although all dependant claims may recite limitations not taught or suggested by Cable in view of the cited art, only claim 10 is discussed below.

Claim 10 recites: “The apparatus of Claim 1, wherein the opposing-force support assembly *comprises a y-axis actuator* such that the opposing-force support is moveable in the y-axis via the y-axis actuator” (Emphasis added). Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 10. Specifically, Cable in view of the cited art fails to teach or suggest “the opposing-force support assembly comprises a y-axis actuator.”

As presented above in response to the rejection of claim 1, the clamp unit of Adams is supported on the tiltable frame of the drill carriage. Thus, the clamp unit of Adams is limited with respect to where the clamp unit can clamp onto the workpiece along the y-axis. More specifically, the clamp unit of Adams can only attach to the workpiece at the same point where the drilling tool drills holes in the workpiece. This is not the equivalent of “the opposing-force support assembly comprises a y-axis actuator” as recited in claim 10.

The amendments to claim 10 are supported in the specification by at least page 6, line 33 through page 7, line 6. No new matter has been added.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 2 and 4-13.

Claims 15, 16, 18-26, and 28

As amended, claim 15 recites, in part:

An assembly for performing a manufacturing operation on a workpiece, the assembly comprising: . . .

a manufacturing tool coupled to the tool support and configured to be engageable with the workpiece to perform the manufacturing operation on the workpiece; and

an opposing-force support assembly moveable along the y-axis independent from the tool support, the opposing-force support assembly coupled to the carriage and securable to the workpiece to at least partially counterbalance a manufacturing force exerted on the work-piece by the manufacturing tool.

(Emphasis added). Claim 15 has been amended to include, in part, the limitations of previous dependent claim 26. Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 15. Specifically, Cable in view of the cited art fails to teach or suggest “an opposing-force support assembly moveable along the y-axis independent from the tool support.”

Applicant incorporates similar reasoning as presented above in response to the rejection of claim 1. Specifically, since the clamp unit of Adams is positioned on the same tiltable platform as the drill unit, the clamp unit is unable to move along the y-axis independent of the drill unit. Thus, Cable in view of Adams fails to teach or suggest *“an opposing-force support assembly moveable along the y-axis independent from the tool support”* as recited in claim 15.

Claims 16, 18-26, and 28 depend from independent claim 15 and are thus allowable for at least the same reasons as independent claim 15. Further, the additional limitations in claims 16, 18-26, and 28 provide limitations which are not taught by the cited reference.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 15, 16, 18-26, and 28.

Claim 29

As amended, claim 29 recites, in part:

A method of performing a manufacturing operation on a workpiece, the method comprising: . . .

applying an opposing force against the workpiece using an opposing-force support assembly, *the opposing-force support assembly comprising a y-axis actuator extendible along the y-axis, an x-axis actuator extendible along the x-axis, and a z-axis actuator extendible along the z-axis.*

(Emphasis added). Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 29. Specifically, Cable in view of the cited art fails to teach or suggest “the opposing-force support assembly comprising a y-axis actuator extendible along the y-axis, an x-axis actuator extendible along the x-axis, and a z-axis actuator extendible along the z-axis.” As presented above in response to the rejection of claim 1, “Cable et al. ‘027 lacks an opposing-force support assembly.” Furthermore, Adams fails to remedy the deficiencies if Cable.

Adams teaches “an actuator 21 for advancing the carriage and the drill unit along the track” as well as “a clamp unit 22 which trails the drill unit and has a clamping element.” (Column 3, lines 26-28). As illustrated in figure 1 of Adams, the actuator 21 operates only in the x-axis. Thus, the clamp unit, which resides on the carriage, is extendible along the x-axis via actuator 21; however, the clamp unit does not comprise “a y-axis actuator extendible along the y-axis” as recited in claim 29.

The amendments to claim 29 are supported in the specification by at least page 7, lines 6-10. No new matter has been added.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 29.

Claims 30-31, and 33-42

Claims 30-31, and 33-42 depend from independent claim 29 and are thus believed allowable at least for their dependency on the allowable base claim. Although all dependant claims may recite limitations not taught or suggested by Cable in view of the cited art, only claim 41 is discussed below.

Claim 41 recites: “The method of Claim 29, wherein applying an opposing force against the workpiece includes *using a vacuum cup assembly to securably engage the workpiece.*” (Emphasis added). The Office relies on Cable in view of Adams in rejection of this claim. Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 41. Specifically, Cable in view of the cited art fails to teach or suggest “using a vacuum cup assembly to securably engage the workpiece” for at least two reasons.

First, Adams teaches “a clamp unit 22 which trails the drill unit and has a clamping element 23 (FIGS. 5, 5a and 5b) insertable in a previously drilled hole” rather than a vacuum cup assembly. (Column 3, lines 27-28). Second, it would not be obvious for one having ordinary

skill in the art at the time the invention was made to use a vacuum cup to engage the workpiece. The use of a vacuum cup is only effective if it attaches to a solid portion of the workpiece. In other words, the use of the vacuum cup is ineffective if it is placed over a hole in the workpiece. Since the clamp unit of Adams is limited to attaching to the workpiece at the same location as the previously drilled hole, the use of a vacuum cup in Adams would be ineffective since the air pressure outside the cup is equal to the air pressure inside the cup due to the presence of the drilled hole. In contrast, claim 41, including the recitations of the independent claim, presents “the opposing-force support assembly comprising a y-axis actuator extendible along the y-axis”, thus allowing the clamp unit to securably engage the workpiece at any position along the y-axis that is within the reach of the y-axis actuator.

The amendments to claim 41 are supported in the specification by at least page 7, lines 25-27. No new matter has been added.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 30-31, and 33-42.

Claims 43-45

As amended, claim 43 recites, in part:

An assembly for performing a manufacturing operation on a workpiece, the assembly comprising: . . .

a manufacturing tool coupled to the tool support, the manufacturing tool engageable with the workpiece to perform the manufacturing operation on the workpiece; and

an opposing-force support assembly comprising a y-axis actuator extendible along the y-axis, an x-axis actuator extendible along the x-axis, and a z-axis actuator extendible along the z-axis.

(Emphasis added). Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 43. Specifically, Cable in view of the cited art fails to teach or suggest “an opposing-force support assembly comprising a y-axis actuator extendible along the y-axis, an x-axis actuator extendible along the x-axis, and a z-axis actuator extendible along the z-axis.”

Applicant incorporates similar reasoning as presented above in response to the rejection of claim 29. Specifically, Adams teaches an actuator that is operable only in the x-axis which is not the equivalent of “an opposing-force support assembly comprising a y-axis actuator extendible along the y-axis, an x-axis actuator extendible along the x-axis, and a z-axis actuator extendible along the z-axis” as recited in claim 43.

The amendments to claim 43 are supported in the specification by at least page 7, lines 6-10. No new matter has been added.

Claims 44 and 45 depend from independent claim 43 and are thus allowable for at least the same reasons as the independent base claim. Further, the additional limitations in claims 44 and 45 provide limitations which are not taught by the cited reference.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 43-45.

Claims 46-48

As amended, claim 46 recites, in part:

A method of performing a manufacturing operation on a workpiece, the method comprising: . . .
applying an opposing force against the workpiece using an opposing-force support assembly, *the opposing-force support assembly moveable along the y-axis independent from the manufacturing tool.*

(Emphasis added). Cable either singly or in view of the cited art fails to teach or suggest the recitations of claim 46. Specifically, Cable in view of the cited art fails to teach or suggest “the

opposing-force support assembly moveable along the y-axis independent from the manufacturing tool.”

Applicant incorporates similar reasoning as presented above in response to the rejection of claim 1. Specifically, since the clamp unit of Adams is positioned on the same tiltable platform as the drill unit, the clamp unit is unable to move independent of the drill unit. Thus, Cable in view of Adams fails to teach or suggest “*an opposing-force support assembly moveable along the y-axis independent from the tool support*” as recited in claim 46. (Emphasis added).

Claims 47 and 48 depend from independent claim 46 and are thus allowable for at least the same reasons as the independent base claim. Further, the additional limitations in claims 47 and 48 provide limitations which are not taught by the cited reference.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 46-48.

CONCLUSION

Applicants respectfully submit pending claims 1-2, 4-13, 15-16, 18-26, 28-31, and 33-48 are now in condition for allowance. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully Submitted,

/Elliott Y. Chen, Reg. No. 58,293/

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